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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/079,906  | 02/22/2002  | Hitoshi Narusawa     | 1660.1001           | 7374             |
| 21171   | 7590        | 09/06/2005           | EXAMINER            |                  |
| STAAS & HALSEY LLP<br>SUITE 700<br>1201 NEW YORK AVENUE, N.W.<br>WASHINGTON, DC 20005 |             |                      | MICHALSKI, JUSTIN I |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2644                |                  |

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                              |                   |
|------------------------------|------------------------------|-------------------|
| <b>Office Action Summary</b> | Application No.              | Applicant(s)      |
|                              | 10/079,906                   | NARUSAWA, HITOSHI |
|                              | Examiner<br>Justin Michalski | Art Unit<br>2644  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 18 January 2005.  
 2a) This action is FINAL.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 2,3,5 and 7 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 2,3,5 and 7 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____.   |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/29/05</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____.                                   |

## DETAILED ACTION

### ***Response to Arguments***

1. Applicant's arguments, see pages 4-6, filed 29 January 2005, with respect to the rejection(s) of claim(s) 2,3,5, and 7 under 35 USC 103(a) have been fully considered and are persuasive that Kandel does not disclose a detector that detects a frequency band having a highest energy level among frequency bands comprising the acoustic signals input to the input unit. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Terry et al.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Terry et al. (Hereinafter "Terry") (US Patent 5,388,185) in view of Kandel et al. (Hereinafter "Kandel") (US Patent 6,353,671) and further in view of "Speech Recognition System", 1 September 1970, IBM Technical Disclosure Bulletin, Vol. 13, Issue 4, pages 828-831, (Hereinafter "IBM").

Regarding Claim 2, Terry discloses an acoustic processor (Fig. 2), comprising: an input unit into which acoustic signals are input (Analog input 10); a detector detecting a frequency band having a highest energy level among frequency bands comprising the

acoustic signals input into the input unit (spectral analysis and formant extraction 42 and 44; Col. 6, lines 41-55). Although Terry discloses increasing the amplification degree at frequencies higher than the first formant to improve speech intelligibility (Col. 6, lines 41-55), Terry does not disclose maintaining the energy level of the acoustic signals substantially constant for frequency bands lower than the first formant or a 6 dB/octave filter. Kandel discloses a processor for increasing speech intelligibility including a amplifier which amplifies also amplifies second formants (i.e. higher frequency bands) without passing the first formant (Col. 9, lines 5-9). Kandel (Fig. 2) discloses a variable frequency response where low frequencies (i.e. lower than first formant) maintained at a constant level to increase speech intelligibility (Col. 5, lines 57-60). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a variable frequency response which maintains energy lower than the first formant and increase gain higher than the first formant to increase speech intelligibility as taught by Kandel.

Terry/Kandel do not disclose a 6 dB/octave high pass filter characteristic. IBM discloses a speech recognition system which also emphasizes higher formants. IBM discloses a filter shown in drawing B which rises at 6 db/octave to help raise the amplitude of the second format above that of the first formant (Paragraph bridging pages 2 and 3). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a filter of 6 db/octave in order to help raise the second format above the first format (i.e. higher frequency bands) as taught by IBM to increase second formants and increase speech intelligibility

4. Claims 3, 5, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terry et al. (Hereinafter "Terry") (US Patent 5,388,185) in view of Kandel et al. (Hereinafter "Kandel") (US Patent 6,353,671).

Regarding Claim 3, Terry discloses an acoustic processor (Fig. 2), comprising: an input unit into which acoustic signals are input (Analog input 10); a detector detecting a frequency band having a highest energy level among frequency bands comprising the acoustic signals input into the input unit (spectral analysis and formant extraction 42 and 44; Col. 6, lines 41-55). Although Terry discloses increasing the amplification degree at frequencies higher than the first formant to improve speech intelligibility (Col. 6, lines 41-55), Terry does not disclose maintaining the energy level of the acoustic signals substantially constant for frequency bands lower than the first formant or a delay. Kandel discloses a processor for increasing speech intelligibility including a amplifier which amplifies also amplifies second formants (i.e. higher frequency bands) without passing the first formant (Col. 9, lines 5-9). Kandel (Fig. 2) discloses a variable frequency response where low frequencies (i.e. lower than first formant) maintained at a constant level to increase speech intelligibility (Col. 5, lines 57-60). Kandel further discloses a circuit (122) which will inherently have a delay tot the input acoustic signal to the amplifier (i.e. variable equalizer) 114. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a variable frequency response which maintains energy lower than the first formant and increase gain higher than the first formant to increase speech intelligibility as taught by Kandel.

Regarding Claim 5, Terry discloses an acoustic processor (Fig. 2), comprising: an input unit into which acoustic signals are input (Analog input 10); a detector detecting a frequency band having a highest energy level among frequency bands comprising the acoustic signals input into the input unit (spectral analysis and formant extraction 42 and 44; Col. 6, lines 41-55). Although Terry discloses increasing the amplification degree at frequencies higher than the first formant to improve speech intelligibility (Col. 6, lines 41-55), Terry does not disclose maintaining the energy level of the acoustic signals substantially constant for frequency bands lower than the first formant or a shift in the variable equalizer. Kandel discloses a processor for increasing speech intelligibility including a amplifier which amplifies also amplifies second formants (i.e. higher frequency bands) without passing the first formant (Col. 9, lines 5-9). Kandel (Fig. 2) discloses a variable frequency response where low frequencies (i.e. lower than first formant) maintained at a constant level to increase speech intelligibility (Col. 5, lines 57-60). Kandel et al. further discloses the rise frequency of the variable equalizer shifts to a low frequency side as the energy level of the input acoustic signals decreases (Figure 2 discloses the frequency decreasing (low frequency side) as the acoustic gain decreases between 360 and 1440 Hz), and the rise frequency of the variable equalizer shifts to a high frequency side as the energy level of the input acoustic signals increases (Figure 2 discloses the frequency increasing (high frequency side) as the acoustic gain increases between 360 and 1440 Hz). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a

variable frequency response which maintains energy lower than the first formant and increase gain higher than the first formant to increase speech intelligibility as taught by Kandel.

Regarding Claim 7, it is inherent that the equalizer will have a response time of 5 msec for a signal of (1sec/.005sec) 200 Hz (i.e. high frequency side) and a response time of 10 msec for a signal of (1sec/0.01sec) 100 Hz (i.e. low frequency side) in order to process the audio signals.

### ***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Michalski whose telephone number is (571)272-7524. The examiner can normally be reached on M-F 7-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571)272-7848. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JIM  
  
August 24, 2005

  
VIVIAN CHIN  
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